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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/903,174 | 07/11/2001 | Motoi Tariki | 1232-4735 | 9369 |

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| EXAMINER | |
|---|---|
| TRAN, NHAN T | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2615 | |

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/903,174 | TARIKI, MOTOI | |
| | Examiner | Art Unit | |
| | Nhan T. Tran | 2615 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *41-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/20/2004 has been entered.

### *Response to Arguments*

2. Applicant's arguments with respect to newly added claims 41-51 have been considered but are moot in view of the new grounds of rejection.

In addition, the Examiner has found no specific arguments from the Applicant regarding the teaching of Yamagishi that was applied under 35 USC 102(e) rejection. The following new grounds of rejection are made in view of Yamagishi under 35 USC 103(a) for claims 41, 43-51, and Yamagishi in view of Tomassi et al (US 5,606,707) for claim 42.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 41, 43-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagishi (US 6,710,807).

Regarding claim 41, Yamagishi discloses an image sensing apparatus comprising:

an image sensor (14) as shown in Fig. 1;

a shielding member (shutter 12) capable of shielding a light to said image sensor from an object (Fig. 1; col. 4, lines 3-8 and col. 13, lines 55-61);

a storage area (memory 30) adapted to store first signals for at least two frames (two dark frames as shown in Fig. 13), wherein the first signals are generated by said image sensor when a light to said image sensor from the object is shielded by said shielding member (col. 17, lines 31-46);

a first controller (system control circuit 50, memory control circuit 22) adapted to repeatedly write new first signals on the first signals in said storage area in a predetermined order; a second controller (system control circuit 50, memory control circuit 22) adapted to stop writing a new first signal in the storage area when a capturing operation of a second signal (sensed image signal) is designated (SW2 is turned on), wherein the second signal is generated by said image sensor when a light to said image sensor from the object is not shielded by said shielding member (Figs. 1 & **13**; col. 23, lines 35-50; col. 4, lines 43-47 and col. 17, lines 30-46). *It is noted that the first and second controllers are functional in combination for repeatedly writing data into the memory 30 and that the dark capture is repeated until SW2 is turned on.*

a correction unit adapted to correct the second signal based on the first signal that has been completely stored for one frame in said storage area before the capturing operation of the second signal is initiated (Fig. 13; col. 23, lines 45-50 or col. 17, lines 50-56).

Although Yamagishi teaches that the dark frames are repeatedly written into a predetermined area of the memory 30 until the shutter SW2 is turned on (see Fig. 13 and col. 23, lines 36-50) and the image correction is done based on the latest dark frame (col. 23, lines 48-50), Yamagishi does not *explicitly* describe that the first controller adapted to repeatedly overwrite new first signals on the first signals in the memory 30 in a predetermined order, and the second controller adapted to stop overwriting a new first signal in the memory 30 when a capturing operation of a second signal is designated. However, since the memory 30 is portioned into areas for storing dark frames and sensed image frames separately (col. 4, lines 65-66), an operation of overwriting of new dark frames on previous dark frames would be obvious by configuring and partitioning the predetermined area of the memory 30 to be substantially small for holding only a few dark frames (for example 2 frames) to leave more room for storing sensed image frames. In this view, if the time interval between the shutter switches SW1 and SW2 is long enough for writing 3 or 4 frames, the predetermined or portioned areas would be full after storing first and second dark frames, and new coming third and fourth dark frames would be overwritten on the old first and second dark frames. It is important in Yamagishi that only latest dark frames are matter for image correction (col. 23, lines 48-50).

Therefore, it would have been obvious to one of ordinary skill in the art to configure the first controller to overwrite the predetermined area of the memory 30 with new dark frames on the old dark frames if the time interval between the shutter switches SW1 and SW2 is long and

the second controller to stop overwriting a new dark frame when the shutter switch SW2 is turned on since such configuration would yield more memory for storing sensed image frames while only utilizing latest dark frames for image correction.

Regarding claims 43 & 44, it is shown in Fig. 13 that new dark frames are captured and stored at a predetermined time interval in a photographing preparation state (between SW1 and SW2).

Regarding claim 45, as disclosed in col. 17, lines 50-56, the sensed image signal is corrected to remove dark current noise. Inherent in Yamagishi is that the first signal (dark signal) stored in the memory must be subtracted from the second signal (sensed image signal) in order to remove dark current noise in the sensed image signal as disclosed.

Regarding claims 46 & 47, Yamagishi clearly shows that the first controller allows storage of the second signal in the storage area in continuous photographing (see Fig. 13; col. 23, lines 36-50 and col. 17, lines 38-46).

Regarding claim 48, see the analyses of claim 1 and 45.

Regarding claim 49, further disclosed is the first controller has a function of controlling the time of storage of electric charge to the image sensor during which a dark current noise component is acquired (see col. 13, lines 55-61; col. 17, lines 24-29 and col. 23, lines 55-60).

Regarding claim 50, Yamagishi further discloses that the correction unit corrects the second signal based on a noise component stored in the storage area and the time of storage of electric charge to the image sensor during which the noise component is acquired (see col. 23, lines 36-60 and col. 17, lines 24-29).

Regarding claim 51, the method claim is met by the analysis of claim 1.

4. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagishi (US 6,710,807) in view of Tomassi et al (US 5,606,707).

Regarding claim 42, Yamagishi is just silent for a teaching of whenever overwriting a new first signal for one frame generated by said image sensor on the first signal in said storage area, said first controller switches storage areas of the first signals on which the new first signal is to be overwritten.

As taught by Tomassi, it is well known that a memory is configured in a rotating buffer concept. This means that the memory is organized in a fashion whereby an address pointer is incremented through a memory range, such that after the address pointer reaches the end of its range, it simply increments back to the first location of the range. Therefore, once the data size becomes greater than the buffer size, additional data entering the buffer overwrites the oldest data present in the buffer (see col. 24, lines 41-50).

Therefore, it would have been obvious to one of ordinary skill in the art to configure the predetermined area of the memory 30 in Yamagishi for storing dark frames using the rotating buffer concept taught by Tomassi as an obvious configuration of memory control to efficiently manage the use of memory.

*It is noted that "switches" as claimed are inherently met by the pointers and internal semiconductor switches of the memory under control of a memory control circuit.*

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (703) 605-4246. The examiner can normally be reached on Monday - Thursday, 8:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew B Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NT.

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